The Secret Sauce for Profitable Next Generation Managed LAN Service

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Trends in Managed LAN Market

Innovation in Managed LAN Service

Summary
2 Quick Warm-Up Questions

Enterprise Traffic Pattern in 2 Years Time:

1. North-South (To cloud and back) Vs. East-West (Within the LAN Network)?
   [90%-10%], [75%-25%], [50%-50%]

2. Ratio between Fixed Vs. Wi-Fi?
   [90%-10%], [75%-25%], [50%-50%]
Enterprise Traffic Trends

94% of enterprise workloads will be cloud based by 2021

Cloud Migration

Overall Wi-Fi Traffic Growth:
Wi-Fi traffic from both mobile devices, IoT devices and Wi-Fi-only devices together will account for more than half (51%) of total IP traffic by 2022, up from 43% percent in 2017.

Challenges: lack the flexibility and scalability required by large or distributed enterprises

Source from Cisco Global Cloud Index 2017

Source: Cisco VNI Mobile, 2019
Adoption of Managed Enterprise LAN Service

**Agility:**
New site provisioning or deploying new applications

**Flexibility:**
“cloud alike” Subscription-based & customized solution and plans

**Cost Reduction:**
According to IDC\(^1\), adoption of managed IT can reduce in-house IT costs by \(36\%\)

**IT stuff efficiency:**
Enterprises continue to move workloads to cloud, enabling IT staff to shift focus onto digital technology initiatives

**Security:**
Migration to managed cloud services increases the reliability and security of enterprise networks (innovative cybersecurity tools reside in the Cloud)

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\(^1\) Source: IDC predictive insight, automation and expertise drive added value for managed services white paper
Service Providers are Well Positioned to Offer Managed LAN Service

**Market Access:**
- Easy market access to existing install base
- Certified Service Partner
- One stop shop for connectivity, LAN & WAN services

**Improved User Satisfaction:**
- WAN+LAN: E2E Service Level Assurance, committed KPIs
- Increased visibility management and reporting

**Service Agility:**
- Simple implementation and upgrades that minimize staff effort
- Managed Complexity

But is it a real business opportunity for service providers? Let’s see the numbers
Managed LAN/WLAN Business Opportunity:
According to Gartner by 2022:
Managed LAN/WLAN market size is over $40B, 7% CAGR 2017-2022 with 12% operating margin

IoT:
IoT deployments over managed LAN/WLAN Combined with artificial intelligence (AI) and machine learning (ML) technologies will expand CSPs’ opportunities to monetize services as accurate location based applications and IoT sensors data analysis

WAN and LAN Service Convergence:
Utilize same management architecture to streamline and enforce end to end policies across WAN and LAN

Cross sale opportunities:
Open platform architecture allows MSPs to monetize and cross sale new managed services as security and acceleration
### Challenges in Managed LAN/WLAN Service

#### 1. Complex network planning and configuration

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
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<tbody>
<tr>
<td>![Network Diagram]</td>
<td>Fixed: Services planning and configuration across multiple devices, such as VLAN, TRUNK, Stack, IP, Routing, ACL, etc. with consideration of topology, user location, switch port attribute etc. Not complete Plug &amp; Play.</td>
</tr>
<tr>
<td>![Wireless Symbol]</td>
<td>Wireless: requires professional network planning, simulation and configuration, AP deployment location, channel assignment, etc.</td>
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#### 2. Poor quality of experience

<table>
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<tbody>
<tr>
<td>![IoT Devices]</td>
<td>IoT devices will blast the wireless network (Scale as main challenge, less challenging by bandwidth).</td>
</tr>
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</table>

#### 3. Ongoing maintenance challenges

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<tr>
<td>![Fixed Network]</td>
<td>Fixed network are composed by many boxes different HW/SW - requires upgrades.</td>
</tr>
<tr>
<td>![Heavy Workload]</td>
<td>Heavy human workload for LAN/WLAN tuning, policy updates and optimization. Some will require multiple onsite visits.</td>
</tr>
<tr>
<td>![IoT Devices]</td>
<td>IoT devices introduction requires automated and flexible network segmentation, policy management, and security enforcement.</td>
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#### 4. Security vulnerabilities

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<tr>
<td>![Security Alert]</td>
<td>Traditional networks are exposed to malwares targeting L2 network devices, generating Denial Of Service flood attacks and traffic hijacking translated to network congestion and bad user QoE.</td>
</tr>
</tbody>
</table>
The Managed LAN Service Key Requirements

Managed Service Provider:

Easy to Deploy:
- Zero touch provisioning, “Plug and Play”
- Minimal IT expert manual intervention
- Minimized radio planning required

Easy to Manage:
- Service Provider dashboard
- AI and Insights view
- Simplified and easy RCA

Easy to Sell:
- Upsell: Cloud management portal for service expansions
- Cross sell: Network value added service (as security, optimization)

Enterprise Customer:

Easy On-Boarding:
- Simple process
- Easy to use: Plug and Play, Proactive monitoring
- Minimum maintenance – Self healing, Self optimization
- WLAN and LAN Convergence
- Pay as you grow /On demand Scaling
- Centralized management with full RBAC
Trends in LAN Market

Innovation in Managed LAN Service

(Secret Sauce…)

Summary
Further Evolve The Decoupled Architecture

Cloud Management

- Management Plane
- Control Plane
- Data Plane

Core

- Management Plane
- Control Plane
- Data Plane

Access / Distribution

- Management Plane
- Control Plane
- Data Plane

Tightly coupled Arch.

- Per device management
- Complex RCA
- Not flexible

Management decoupled arch.

- Per device configuration by cloud admin
- Improved RCA
- Flexible

Further Decoupling...

- Centralized control
- Improved RCA
- Flexible
Decoupled & Centralized Architecture

Traditional LAN

- 3-tier, distributed functions and policies, coupling of service and forwarding

Proposed Managed LAN Architecture

- Centralized smart node and multiple access / aggregation simple nodes, decoupling of service and forwarding

Core switch

- Decouple service from device, move services from access & aggregation to the central node

Access switch

- Distributed forwarding
- Distributed policy

Agg switch

- Single point management and control of LAN/WLAN - reduces network complexity and minimize manual work, enables autonomous network.
- Service is decoupled from network forwarding - resulting flexible and scalable network, easy for troubleshooting.
Simplify WLAN Deployment Using Access Point Coordination

**Problem Statement**

**Overqualified AP:**
- 802.11ac link throughput is 6.9Gbps
- 802.11ax link throughput is 9.6Gbps

**Underqualified Network:**
Interference between APs results in serious throughput drop, jitter, packet loss, etc.

**Access Point Coordination Technology For Network Level Enhancement**

**Traditional WiFi**
Waste of AP capability in un-balanced load network.

**Interference Nulling**
Fully use AP capability, maximize network capacity.

**Network MIMO**
Co-channel deployment increase network capacity almost linearly and improve roaming experience.

Co-channel cluster
WAN/LAN Convergence and Up-Sell/Cross-Sell Services

- LAN&WAN unified deployment for faster provisioning.
- Single point of management & control for entire enterprise network helping to reduce the OPEX
- Expanding the Managed-LAN market by leveraging WAN market and provide differentiated services

Central Smart Gateway PoP

- Service POP support for 3rd party VAS integration such as: Security, FW, DPI, AI, Optimization
Open Platform for Managed LAN

Solution Architecture

Simplified architecture designed to host additional services:

- Central Smart Gateway: Provides a single point of management and control for service providers, making it easy to extend managed WAN services to managed LAN services that can host additional service for SP up-sell/cross-sell.

- Simple LAN Devices: Traditional distribution switches and access points are replaced with simpler devices, no forwarding tables, fully managed from centralized device. This result in simplified network planning, configuration and maintenance.

- Simple Wireless Units: Traditional access points replaced by simple remote unit (RRUs), managed by centralized baseband (CBB), empowered by AP coordination technology (Interference nulling, Network MIMO) providing extended throughput capacity and improved user QoE.

Solution Components

- Central Smart Gateway
- Simple LAN Devices
- Simple Wireless Units
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Open Platform for Managed LAN Service - Summary

Provides an easy to manage and deploy WLAN and LAN networks by leveraging innovative network technologies that accelerate cloud migration and leads to profitable business.

Smart Cloud Migration Trends Includes Enterprise Managed LAN

Creates Business Opportunity for managed service provides

New technologies shall be developed to accelerate the implementation and overcome challenges

Innovative technologies - Decoupled Architecture, Wi-Fi AP Coordination, WAN/LAN Convergence

Happy to answer questions, setup meetings and further discuss:

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